

Data Center Energy Efficiency Incentive Programs

Bill Dunckel, PE

CEE Technology Buildings



CFRT Energy Committee
Pacific Energy Center
7-21-06



Programs for Business Customers *At a Glance*

- Energy Audits
- Express Efficiency
- Standard Performance Contracts
- Savings By Design
- Building Operator Certification
- Schools Resource Program
- Emerging Technologies
- Codes and Standards
- Education and Training
 - Industrial Strength Seminars
 - Pacific Energy Center



Energy Audits



- Energy experts can survey your facility, assess your energy usage, and offer advice on ways to save energy and money
- Surveys are offered in a variety of formats:
 - In person
 - Web-based (Internet)
 - CD-ROM
 - Phone
 - Mail-in
- You'll receive energy-saving tips and recommendations on rebate programs

Express Efficiency

- Choose from a predetermined list of eligible energy-efficient equipment in following categories:
 - Lighting
 - HVAC/Food Service/Other
 - Refrigeration
 - Natural Gas
- Annual cap is now \$200,000 per customer
- Must apply before December 31, 2005
- Reservations not required, but advised



Standard Performance Contract

- For standard and customized energy-saving upgrades and retrofits
- Project incentives for facility owner or project “sponsor”, up to \$300,000 per site, up to 50% of the project implementation costs
- 3 Program approaches:
- **Itemized Savings:** For common large retrofit items, calculations and incentives are available online in calculators.
- **Calculated Savings** – Performance based savings based on a customized project
- **Measured Savings** : Performance based savings based on pre and post-project consumption

Standard Performance Contract

The following incentive rates apply by the type of retrofit undertaken

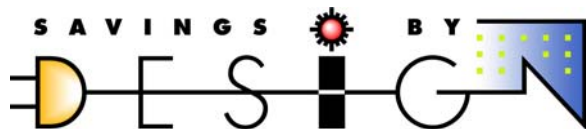
Type of Retrofit	Incentive Rate
Lighting***	5¢ /kWh
HVAC & Refrigeration	14¢ /kWh
Motors, etc.	8¢ /kWh
Natural Gas	\$1 /therm

*** Must be second or third generation lighting technology

Savings By Design



- A statewide program to encourage high-performance nonresidential building design and construction
- Available for new construction and major renovations & remodels
- Available to commercial, industrial, and agricultural projects



Savings By Design

Two Approaches:

1. Whole Building Approach

- Integrated approach results in most energy-efficient and cost-effective buildings

2. Systems Approach

- Where energy systems are designed in phases
- Where one energy system predominates
- When design is too far along to make fundamental changes



Savings By Design

Three Benefits:

1. Design Assistance
2. Owner Incentives
3. Design Team Incentives



Savings By Design

Incentives

- Owners
 - Incentives available when project exceeds program baselines by 10% or more
 - Up to \$150,000 per project
- Design Teams
 - Whole Building projects in schematic or early design development phase
 - Incentives available when building is 15% better than Title-24 baseline
 - Up to \$50,000 per project



Savings By Design



Program Baselines

- Commercial:
 - CA Title 24 requirements
- Industrial Baseline:
 - Legislated mandates, industry guidelines, design protocols, and other commonly accepted industry practices

Project Approach



Current Data Center Opportunities:

- Chiller
- Compressor
- VFD's
- Economizers
- Cooling towers
- Water temperature
- Air temperature



Project Examples



Data Center Systems:

- Cypress Semiconductor data center equipment VFD installations
- Hurricane Electric data center installation of air side economizer
- Sybase data center installation of water cooled chiller with condenser water reset
- Cisco Systems multiple projects in data center and labs

Cisco Systems Case Study

Building 7:

High performance VFD chiller with automatic condenser water temperature reset

- 996,000 kwh
- 140 KW
- 0.1 year payback

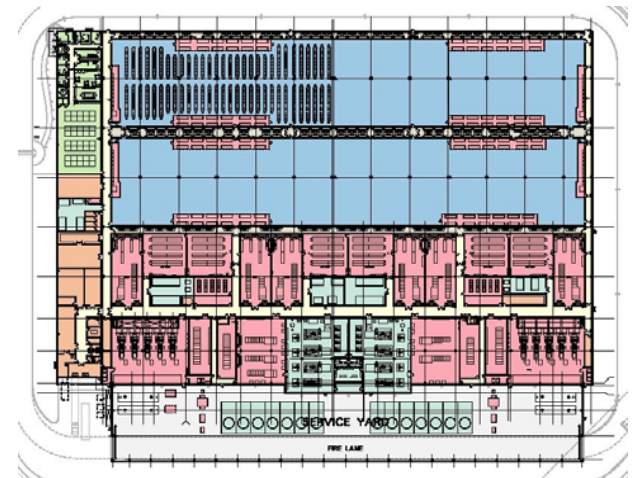


Cisco Systems Case Study

Building 7:

Tower fan Variable Frequency Drive

- 112,000 kwh
- 14 KW
- 0.5 year payback



Cisco Systems Case Study

Building 7:

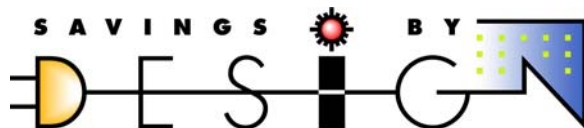
29.5 degree delta T (fan energy)

- 179,000 kwh
- 20 KW
- 0.6 year payback

Energy Design Resources



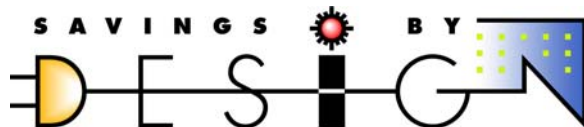
- The education & training component of PG&E's new construction programs oriented towards architects & engineers
- www.energydesignresources.com
- Website contains Design Briefs, Design Guidelines, Case Studies, Design Tools and Online Training to support your new construction projects
- Materials also available in hard copy and on disk



Application Process

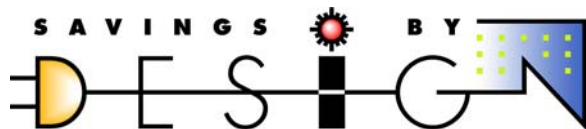


- Project Scope
- Investment criteria
- Call PG&E
- Application
- Pre-field for SPC
- Project meeting
- Verification



Application Example (SBD)

- Example Project Scope – Convert 10,000 sq ft office into data center at 100 W/sq ft.
- Investment Criteria – Maximum 3 year payback
- Call PG&E – CEE Rep, AS Rep, Web, 1-800-468-4743
- Application – Letter of Interest
- Pre-field for SPC – n/a for SBD
- Project Meeting – EEMs to analyze key design decisions & project schedule
- Verification – Cash incentive payment based upon final installation



Useful Websites and More Program Information

Please visit:

pge.com/foryourbusiness

pge.com/spc

savingsbydesign.com

energydesignresources.com

pge.com/pec

Please call:

Bill Dunckel, PE

408-282-7164

wcd7@pge.com



*Pacific Gas and
Electric Company*[®]